

WHAT IS CLAIMED IS:

1 1. A method of causing an improvement in function of the central nervous system of
2 a subject having impaired central nervous system function, comprising administering to the
3 subject an aliquot of cells derived from umbilical cord blood.

1 2. A method of causing an improvement in a function of the central nervous system
2 of a subject, comprising administering to the subject an aliquot of cells derived from blood,
3 the aliquot containing stem cells.

1 3. A method of causing an improvement in a function of the central nervous system
2 of a subject, comprising administering to the subject an aliquot of cells derived from blood
3 and a growth factor.

1 4. The method of claim 2 or 3 wherein the cells are derived from umbilical cord
2 blood.

1 5. The method of claim 2 or 3 wherein the cells are derived from peripheral blood.

1 6. The method of claim 1, 2 or 3 further comprising obtaining the aliquot of cells by
2 separating a desired cell population from the cord blood.

1 7. The method of claim 3 wherein the growth factor is selected from the group
2 consisting of oncostatin M and growth factors from the following families: FGF,
3 neurotrophin, IGF, CNTF, EGF, TGF-beta, LIF, interleukins, PDGF and VEGF.

1 8. The method of claim 1, 2 or 3 further comprising obtaining a sample of cells and
2 purifying the sample to obtain the aliquot.

1 9. The method of claim 1, 2 or 3 further comprising obtaining a sample of cells and
2 expanding at least a selected population of cells in the sample ex vivo to obtain the aliquot.

1 10. The method of claim 1, 2 or 3 wherein said aliquot of cells comprises allogeneic
2 cells.

1 11. The method of claim 1, 2 or 3 wherein said aliquot of cells comprises autologous
2 cells.

1 12. The method of claim 1, 2 or 3 wherein the improvement results in recovery from
2 a central nervous system trauma.

1 13. The method of claim 1, 2 or 3 wherein the improvement results in repair of
2 central nervous system damage.

1 14. The method of claim 1, 2 or 3 wherein the improvement results in repair of
2 central nervous system disease.

1 15. The method of claim 1, 2 or 3 wherein the improvement results in regeneration of
2 central nervous system tissue.

1 16. The method of claim 1, 2, or 3 wherein the improvement comprises measurable
2 stroke recovery.

1 17. The method of claim 1, 2, or 3 wherein the improvement is the result of stroke
2 repair.

1 18. The method of claim 1 wherein the improvement results from tissue regeneration
2 after a stroke.

1 19. The method of claim 1, 2 or 3 wherein the improvement results from a genetic
2 element contained in the administered cells.

1 20. The method of claim 19 wherein the genetic element is endogenous to the
2 administered cells.

1 21. The method of claim 19 wherein the genetic element has been exogenously
2 added to the administered cells.

1 22. The method of claim 1, 2 or 3 wherein the improvement comprises head trauma
2 recovery.

1 23. The method of claim 1, 2 or 3 wherein the improvement comprises head trauma
2 repair.

1 24. The method of claim 1, 2 or 3 wherein the improvement results from tissue
2 regeneration after head trauma.

1 25. The method of claim 1 or 2 wherein the cells are administered intercerebrally,
2 intracisternally, intracerebroventricularly, or intraparenchymally.

1 26. The method of claim 1 wherein the cells are CD 34+/-, Lin- cells or precursor
2 cells.

1 27. The method of claim 26 wherein the cells are characterized as: CD2⁻, CD3⁻, CD14⁻,
2 CD16⁻, CD19⁻, CD24⁻, CD56⁻, CD66b⁻, glycophorin A⁻, flk-1⁺, CD45⁺, CXCR4⁺, MDR⁺.

1 28. The method of claim 1, 2 or 3 wherein the improvement results from treatment of
2 one of the following diseases: Parkinson's Disease, Alzheimer's Disease, Huntington's
3 Disease, ALS, MS, Tay-Sacks, and cerebral palsy.

1 29. The method of claim 1, 2 or 3 further comprising administering to the subject a
2 cell differentiation factor.

1 30. The method of claim 1, 2 or 3 further comprising administering to the subject a
2 neural guidance molecule.

1 31. The method of claim 3 wherein the growth factor is administered intercerebrally,
2 intracisternally, intracerebroventricularly, or intraparenchymally.

1 32. The method of claim 3 wherein the growth factor is administered with the aliquot
2 of cells.

1 33. The method of claim 3 wherein the growth factor is administered separately from
2 the aliquot of cells.

1 34. The method of claim 1, 2 or 3 wherein the aliquot of cells is administered directly
2 to a site of brain injury.

1 35. The method of claim 13 wherein the damage is due to lack of oxygen to the
2 brain.

1 36. The method of claim 35 wherein the damage is due to stroke or asphyxiation.

1 37. A method of causing an improvement in central nervous system function of a
2 patient comprising:

3 obtaining an aliquot containing a predetermined target population of cells by

4 (a) introducing a starting sample of cells into a growth medium

5 (b) causing cells of the predetermined target population to divide; and

6 (c) concurrently with, intermittently during, or following step (b), contacting
7 the cells in the growth medium with a selection element, so as to select cells of the target
8 population from other cells in the growth medium; and
9 administering the aliquot to the patient.

1 38. The method of claim 37 wherein the selection element comprises a plurality of
2 selective binding molecules with affinity either for target cells or for a first population of
3 non-target cells.

1 39. The method of claim 37 wherein the starting sample is cord blood or is derived
2 from cord blood.

1 40. The method of claim 37 wherein said aliquot of cells comprises CD 34+/-, Lin-
2 cells.

1 41. The method of claim 37 wherein said expansion is clonogenic.

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